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## מבוא לאקונומטריקה

**3** : תרגיל 2

, ,  $\hat{Y} = a + bX$  OLS , ,  
 $e -$  ,  $\hat{Y}$  ,  $Y$  ,  $X$

משקל כל סעיף שהתשובה עליו איננה מדוייקת ומלאה 2.5 נקודות.

שאלה 1

. 5

.i ( ) -  $Y_i$

.i ( ) -  $X_i$

: .1

	(Y)	(X)	y	x	y <sup>2</sup>	x <sup>2</sup>	xy
1	80	100					
2	70	80					
3	90	110					
4	70	90					
5	90	120					

? ,  $\hat{Y} = a + bX$  , .2

$$b = \frac{\sum xy}{\sum x^2} \quad a = \bar{Y} - b\bar{X} :$$

? .3

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.(e) (Ŷ) .4  
 .(Ŷ) (Y)

	Y	X	Ŷ	e
"				

- H : .5

	X	H
"		

. ,  $\hat{H} = c + dX$  .6



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2

: " 5

	(Y) \$	(X)
A	6	19
B	8	20
C	8	18
D	7	17
E	17	40

? A - E , \$ , .1

?25% , A - E , \$ , .2

? A - E , (\$ ) \$ - , .3

? A - E \$ .4

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: 5

	(Y) \$	(X)
F	12	19
G	11	15
H	12	15
I	9	16
J	10	21

?  $F - J$  , \$ , .5

?  $F - J$  , \$ , .6

?  $F - J$  , .7

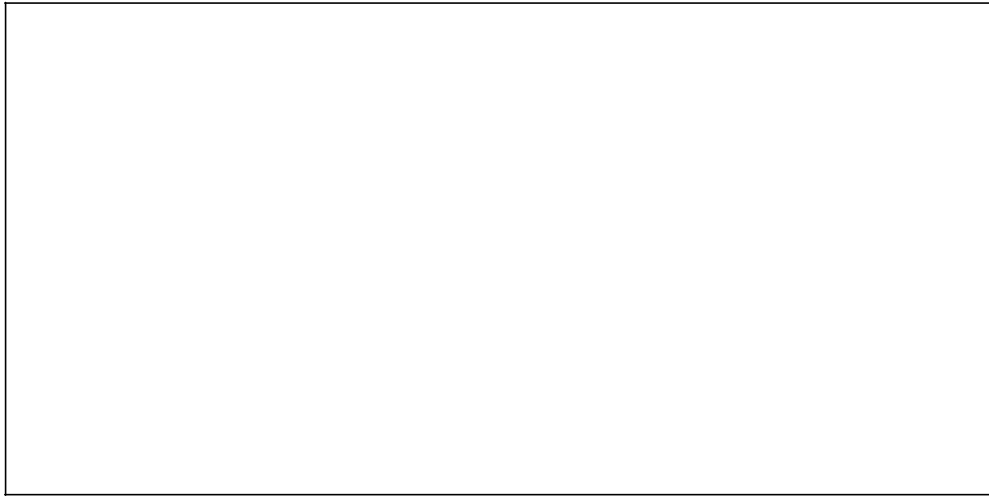
, \$ , .8

?  $F - J$

\_\_\_\_\_ : \_\_\_\_\_ .. \_\_\_\_\_ : \_\_\_\_\_ :

, \$ .9

*? F - J*

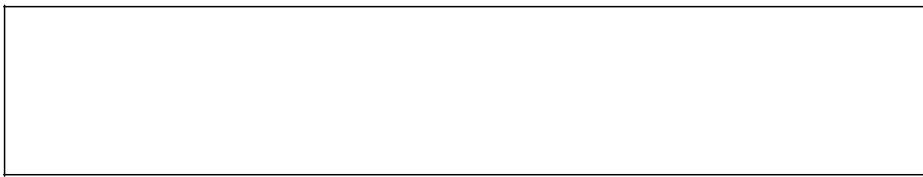


.\$ \$- .10

,25%

.( ) 1-

?

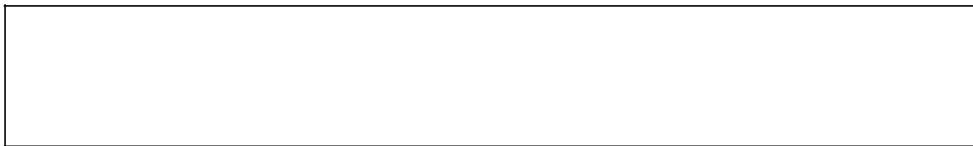


?



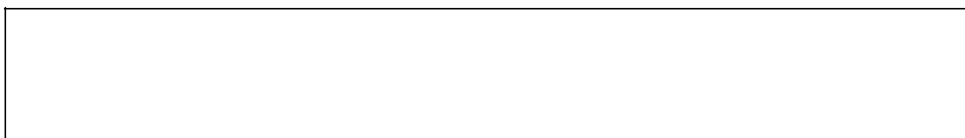
.11

*? F - J*



.12

*? F - J*



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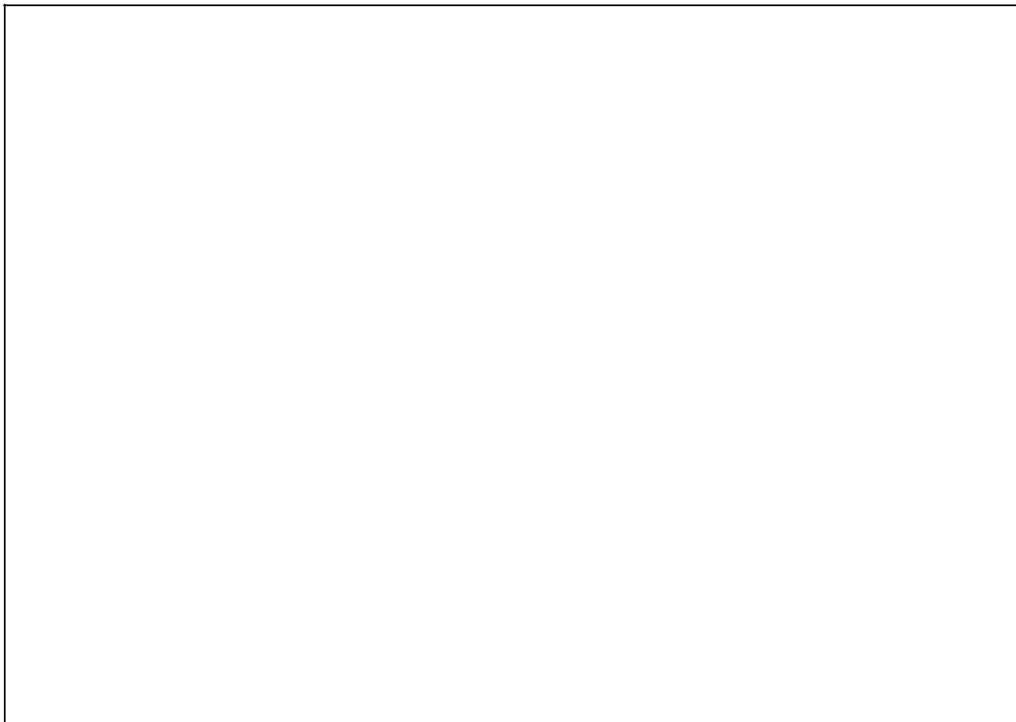
**3**

: 5 (X) (Y)

( " ) Y	120	100	140	180	60
( " ) X	4	5	4	3	9

. .1


. .2



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.(e)  $(\hat{Y})$  .3

	Y	X	$\hat{Y}$	e
"				

$$\frac{\sum y_i^2}{n} = \frac{\sum \hat{y}_i^2}{n} + \frac{\sum e_i^2}{n} : .4$$

	$(Y - \bar{Y})^2$	$(\hat{Y} - \bar{\hat{Y}})^2$	$(e - \bar{e})^2$
"			

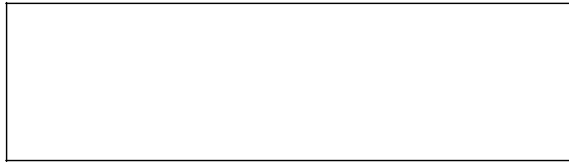
$$\frac{\sum y_i^2}{n} = \frac{\sum (Y - \bar{Y})^2}{n} = .5$$

$$\frac{\sum \hat{y}_i^2}{n} = \frac{\sum (\hat{Y} - \bar{\hat{Y}})^2}{n} = .6$$

$$\frac{\sum e_i^2}{n} = \frac{\sum (e_i - \bar{e})^2}{n} = .7$$



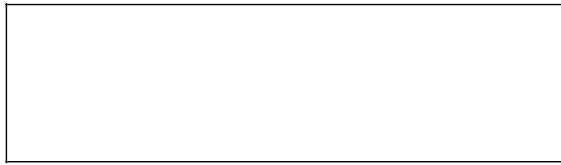
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: .8

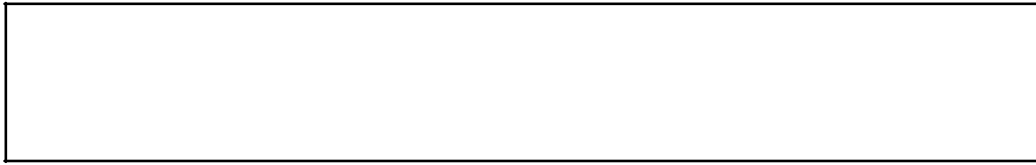


: .9

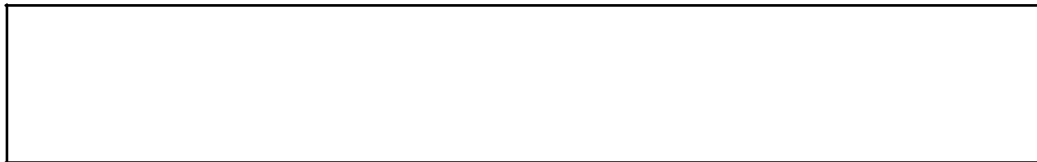


: .10

? .11

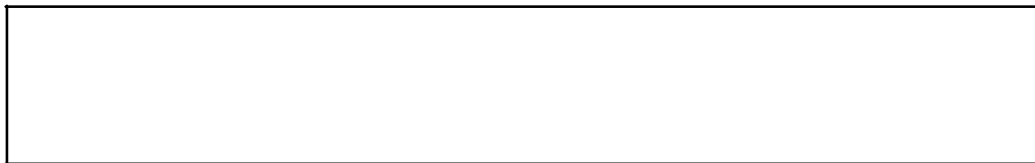


? " 6 .12



.13

? " 20



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4

X . 500  
Y

$$n = 500 \quad \sum_{i=1}^n X_i = 24,838 \quad \sum_{i=1}^n Y_i = 107,226$$

$$\sum [X_i - \bar{X}]^2 = 66,398 \quad \sum [Y_i - \bar{Y}]^2 = 1,398,308$$

$$\sum [X_i - \bar{X}] [Y_i - \bar{Y}] = 194,293$$

? .1

? .2

?(X, Y) .3

? \$70,000 .4

? .5

?\$49,676 .6

?  $\bar{Y}$  -  $\bar{X}$  .7

? .8